

## A LIST OF THE SPIDERS OF PEPPERMINT IN WESTERN AND CENTRAL OREGON

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*Abstract.*—Forty-five species of spiders, comprising 36 genera and 13 families, were collected by sweep net and pitfall trap from six peppermint fields in western and central Oregon from May through August 1981. Although the fauna from western Oregon exhibited a higher species richness than that of central Oregon (40 vs. 28 species respectively), the rank order of numerically dominant species was very similar in each region: in western Oregon, the rank order of abundance was *Tetragnatha laboriosa*, *Erigone dentosa*, *Misumenops celer* and *Enoplognatha ovata*; in central Oregon, the most common species collected was *Erigone dentosa*, followed by *Misumenops celer*, *Pardosa sternalis*, and *T. laboriosa*. Thus, the difference in species richness between the two regions is primarily due to the addition of rarer species in western Oregon.

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Generalist arthropod predators are potentially important regulators of insect pest populations in Oregon peppermint (Berry, 1977). Although the suite of predaceous insect species found in peppermint is similar to that of other agroecosystems (Hollingsworth, 1981), little is known about the spider fauna. This study was conducted to provide a list of the spider fauna for the two major peppermint growing areas of Oregon.

Peppermint is grown primarily in the Willamette Valley in the western part of the state and on the fringes of the Great Basin Desert in central Oregon. These two areas differ markedly in climate and native vegetation. The Willamette Valley is classified as maritime, having warm, wet winters, warm, dry summers and an average annual precipitation of 120 cm. Forest groves and savannahs dominated by Garry Oak are a conspicuous feature of the Willamette Valley Province (Franklin and Dyrness, 1973). The principle peppermint growing area in central Oregon is in the Columbia Basin Province, characterized by warm, dry summers, cold, dry winters and an average annual precipitation of 40 cm. Bunchgrass and sagebrush dominate this region, with forest vegetation confined to mountain slopes.

Peppermint is harvested in both regions from mid to late August. Because most of the above-ground biomass is removed for oil or for tea production, all foliage dwelling and some ground dwelling arthropod species must annually recolonize the crop from surrounding areas. For this reason, the arthropod fauna that eventually colonizes peppermint over the growing season may have a species composition that is unique to the region within which peppermint grows. Because western and central Oregon differ so markedly in climate and vegetation, any species list for peppermint must incorporate this regional influence.

Table 1. List of spider species collected by sweep net (S) and pitfall trap (P) in central and western Oregon peppermint, May through August 1981. Index of relative abundance: A = abundant, 10% of total individuals collected over the entire sampling period; C = common, between 1% and 10%; R = rare, less than 1%.

Guild and Species	Collecting Method		Relative Abundance	
	S	P	West OR	Cent OR
<b>Orb-Weavers</b>				
<i>Araneus</i> sp. (imm)	X		R	
<i>Araniella displicata</i> (Hentz)	X		R	R
<i>Argiope trifasciata</i> (Forsk.)	X		R	
<i>Metapeira foxi</i> Gertsch & Ivie	X		R	R
<i>Neoscona</i> sp. (imm)	X		C	
<i>Tetragnatha laboriosa</i> Hentz	X		A	C
<b>Space-Web Weavers</b>				
<i>Dictyna oregona</i> Gertsch	X		C	
<i>Dictyna tridentata</i> Bishop & Ruderman	X		C	
<i>Tricholathys rothi</i> Chamb. & Gertsch	X	X	C	
<i>Tricholathys spiralis</i> Chamb. & Ivie		X	R	R
<i>Enoplognatha marmorata</i> (Hentz)	X	X	R	R
<i>Enoplognatha ovata</i> (Clerck)	X	X	C	R
<i>Enoplognatha thoracica</i> (Hahn)	X	X	R	R
<i>Neottiura bimaculatum</i> (L.)	X		R	
<i>Theridion neomexicanum</i> Banks	X			R
<b>Sheet-Web Weavers</b>				
<i>Erigone dentosa</i> O. P. Cambridge	X	X	A	A
<i>Walckenaeria spiralis</i> (Emerton)		X		R
<i>Bathypantes brevipes</i> (Emerton)	X	X	C	R
<i>Lepthyphantes tenuis</i> (Blackwall)	X	X	C	R
<i>Linyphantes</i> sp. (imm)		X	R	
<i>Microlinyphia mandibulata</i> (Emerton)	X		R	
<i>Pimosa altiocularata</i> (Keyserling)	X		R	
<i>Tennesseellum</i> sp.		X	R	
<b>Funnel-Web Weavers</b>				
<i>Agelenopsis</i> sp. (imm)	X		R	
<b>Hunters</b>				
<i>Pardosa dorsuncata</i> Lowrie & Dondale		X	C	C
<i>Pardosa sternalis</i> (Thorell)		X	C	A
<i>Schizocosa mccooki</i> (Montgomery)		X	R	C
<i>Oxyopes salticus</i> Hentz	X	X	R	R
<i>Oxyopes scalaris</i> Hentz	X	X	R	C
<i>Drassyllus depressus</i> (Emerton)		X	R	C
<i>Zelotes fratris</i> Chamberlin		X	R	R
<i>Sergiolus montanus</i> Emerton	X		R	
<i>Micaria</i> sp.		X		C
<i>Misumena vatia</i> (Clerck)	X		C	
<i>Misumenops celer</i> (Hentz)	X	X	A	C
<i>Xysticus cunctator</i> Thorell	X	X		C
<i>Xysticus</i> sp. (imm)	X			C
<i>Apollophanes margareta</i> Lowrie & Gertsch		X	R	R
<i>Tibellus oblongus</i> (Walckenaer)	X		C	
<i>Philodromus</i> sp. (imm)	X		C	R
<i>Thanatus</i> sp. (imm)	X		R	
<i>Eris</i> sp. (imm)	X		C	R
<i>Metaphidippus</i> sp.	X		R	
<i>Phidippus clarus</i> Keyserling	X		R	R
<i>Phidippus</i> sp. (imm)	X		R	R
Total species	34	22	40	28

## STUDY SITES AND METHODS

Spiders were collected from a total of six sites in western and central Oregon. In western Oregon, the principle study site (I) was a three year old, 17 hectare field located three km southwest of Monroe (Linn County). Sites II (3 year, 20 ha) and III (2 year, 20 ha) were located at peppermint fields in the central Willamette Valley, approximately 10 km northwest of Albany (Benton County). In central Oregon, a principal site (IV) was a three year old, 25 ha field seven km northeast of Madras, while another major site (V) was a five year old, seven ha field seven km east of Madras. Site VI was a one year old, 15 ha field located 12 km west of Madras. All three central Oregon sites were in Jefferson County.

Beginning in early May 1981, ground spiders were collected at each of the principal sites (I, IV, V) with the use of 12 cm diameter pitfall traps spaced three meters apart in a 4 × 4 array. Traps were emptied weekly at site I and biweekly at sites IV and V until the peppermint was harvested in late August. Foliage spiders were collected by taking 400, 180° arc sweeps weekly at site I and biweekly at sites IV and V. Sweeps were also taken at irregular intervals throughout the summer at sites II, III, and VI.

## RESULTS AND DISCUSSION

A total of 45 species, representing 36 genera and 13 families, were collected from all six sites in the four month study period—40 species from western Oregon and 28 species from central Oregon (Table 1). Although the western Oregon fauna was 40% richer in species, the numerically dominant species were similar in both collections. The four most commonly collected species at site I (western Oregon) were, in rank order, *T. laboriosa*, *E. dentosa*, *M. celer*, and *E. ovata*, while the combined rank order of abundance at sites IV and V (central Oregon) was *E. dentosa*, *M. celer*, *P. sternalis*, and *T. laboriosa*. These five species are all widely distributed: *T. laboriosa* occurs from Lake Chapala, Mexico to southern Alaska (Levi, 1981), and has been recorded in several lists of agricultural species (Yeargan and Dondale, 1974; Culin and Yeargan, 1983; McIver, 1984); *E. dentosa* is a common species in other agricultural fields (Yeargan and Dondale, 1974; McIver, 1984) and species of *Erigone* are known for their excellent aeronautic dispersal ability (Duffy, 1956); *E. ovata* is a common introduced species of the Pacific Northwest and is characteristic of disturbed habitats (Levi, 1957; Moldenke et al., 1986); *M. celer* is our most common Pacific Coast *Misumenops* (Moldenke et al., 1986) and has been collected in shrubs and from both coniferous and deciduous foliage; and *P. sternalis* is a common streamside denizen, widely distributed in Great Basin country (Vogel, 1970; McIver, pers. obs.). So despite the difference in surrounding habitat between peppermint fields planted in western and central Oregon, 23 spider species are shared, including all four species that represent greater than 10% abundance of either fauna. These observations indicate that in an annually disrupted agricultural field such as peppermint, the spider fauna that develops in a single season will reflect, in part, the dominance of common, ubiquitous species that are good dispersers and are tolerant of disturbed habitats.

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